



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,079	08/11/2006	Gerhard Schiessl	8369.036.US0000	5876
77407 7590 06/23/2009 Novak Druce & Quigg LLP 1300 I Street NW Suite 1000 West Tower Washington, DC 20005				
EXAMINER VELASQUEZ, VANESSA T				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
06/23/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/589,079

**Applicant(s)**

SCHIESSL, GERHARD

**Examiner**

Vanessa Velasquez

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1-25 are canceled. Claims 26-32 are newly added. Currently, claims 26-32 are pending and presented for examination on the merits.

### ***Status of Previous Objections***

The previous objection to the specification is withdrawn in view of the amendments to the specification.

### ***Status of Previous Rejections under 35 USC § 112***

The previous rejections of claims 1-9 and 14 are moot in view of the canceled status of the claims.

### ***Claim Rejections - 35 USC § 112, First Paragraph***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 26-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had

possession of the claimed invention. Specifically, claim 26 recites that the heat treated blank is allowed to "stand at room temperature for an interval of time". There appears to be no support for this limitation in the original disclosure. Claims 27-32 are likewise rejected for being dependent on a rejected base claim.

***Claim Rejections - 35 USC § 112, Second Paragraph***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 26-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 26 recites the limitation "layer thickness". There is insufficient antecedent basis for this limitation in the claim because it is not clear to which layer the layer thickness refers (e.g., the blank, the aluminum coating, etc.). Claims 27-32 are likewise rejected for being dependent on a rejected base claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 26-29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al. (US 2,992,148) in view of Takagi et al. (US 2004/0009366 A1) and further in view of *Smithells Metals Reference Book* (8<sup>th</sup> ed. Edited by W.F. Gale and T.C. Totemeier).

Regarding claims 26 and 32, Yeo et al. teach a method of heat treating steel for imparting properties such as good magnetic properties, low impact transition temperatures, and high yield and tensile strengths to the steel alloy for use in the manufacture of rotor shafts (component) (col. 2, lines 61-72 to col. 3, lines 8-13). The method comprises austenitizing the steel (col. 5, lines 22-37); quickly cooling the steel at rates as high as 216,000°F per hour (col. 5, lines 37-44); further cooling the steel to room temperature or to a temperature above room temperature (col. 5, lines 44-47); austenitizing the steel for a second time (col. 5, lines 47-56); and tempering and cooling the steel (col. 5, lines 56-66). It is noted that Yeo et al. do not explicitly state that the alloy steel stands at room temperature for an interval of time. However, the steel would have inherently been at room temperature for some time period because the alloy steel

is at room temperature long enough for a determination to be made that the alloy steel is in fact at room temperature.

Still regarding claims 26 and 32, Yeo et al. do not teach that the alloy steel is coated with aluminum. However, coating aluminum with steels is well known in the art, as evidenced by Takagi et al. U.S. Patent Application Publication 2004/0009366 A1 issued to Takagi et al. teaches a structural steel member that is coated with aluminum and silicon that form various Al-Si-Fe phases (para. [0016]). These phases enhance the formability, corrosion resistance, and weldability of the underlying steel member (para. [0016]). Thus, it would have been obvious to one of ordinary skill in the art to have coated the alloy steel of Yeo et al. with the aluminum-silicon coating because said coating would improve the formability, corrosion resistance, and weldability of the steel on which the coating is applied. With regard to the increase in layer thickness, Takagi et al. teach that the aluminum-silicon-iron coating grows and spreads to reach the surface as a result of the heat treatment disclosed therein (para. [0015]). Furthermore, given that the two-step heat treatment of Takagi et al. that causes the growth of the aluminum-silicon-iron coating is substantially similar to that of Yeo et al., a coating of aluminum-silicon-iron on a steel processed by the method of Yeo et al. would also be expected to grow.

Still regarding claims 26 and 32, Yeo et al. teach forging (forming) the alloy steel while it is in a heated at an austenitizing temperature (col. 5, lines 36-37). Takagi et al. teach that forming occurs while the coated steel is in a heated state of 700-800°C (para. [0028]). This particular range is desired so that the coating does not oxidize; in addition,

quenching from the range of 700-800°C enables martensite to form (Takagi et al., para. [0028]). Furthermore, it is well known to one of ordinary skill in the metallurgical arts to form metals, as evidenced by *Smithells Metals Reference Book*. In *Smithells Metals Reference Book*, forming operations such as extrusion, forging, rolling, and drawing may be performed when the metal is in a hot or cold state, the choice of which sometimes depends on the desired characteristics of the metal end product (p. 30-5 to 30-7). Thus, it would be obvious to one of ordinary skill in the art to conduct a forming operation while a steel alloy is heated because hot forming operations are conventional, and, in some cases, provides a degree of control over the geometry of the final product (para. 30.5.2.4).

Regarding claims 27 and 29, Yeo et al. in view of Takagi et al. do not disclose the claimed times for the first and second austenitization treatments. However, soaking time is dependent on factors such as geometry of the workpiece (load), the type of steel and its properties, and conditions within the furnace (*Smithells Metals Reference Book*, p. 29-22). Thus, it would be obvious and seemingly routine for one of ordinary skill in the art to choose an appropriate austenitization soaking time for a given type of steel given its geometry and composition (*Smithells Metals Reference Book*, p. 29-24, Figures 29.13a,b; p. 29-22 to 29-23 equations therein).

Regarding claim 28, Takagi et al. teach that oxide formation on the coating is minimized and at most 500mg/dm<sup>2</sup> (includes zero) during the heat treatment therein (para. [0018], [0028]).

8. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al. (US 2,992,148) in view of Takagi et al. (US 2004/0009366 A1) and further in view of *Smithells Metals Reference Book* (8<sup>th</sup> ed. Edited by W.F. Gale and T.C. Totemeier), as applied to claim 26 above, and further in view of Hassell et al. (Induction Heat Treating of Steel," Vol. 4, ASM Handbooks Online).

Regarding claim 30, Yeo et al. in view of Takagi et al. and *Smithells Metals Reference Book* do not teach heating the sheet to different intensities at different locations during the second heat treatment. Hassell et al. teach that it is common to heat treat at selected locations of the surface of an alloy order to obtain a part that has varying mechanical properties (Hassell, "Selective Hardening"). A surface with different mechanical properties is sometimes required for applications where, for instance, the loading stresses vary or are uneven (Hassell, "Selective Hardening"). Therefore, it would have been obvious to one of ordinary skill in the art to heat the steel of Yeo et al. in view of Takagi et al. and *Smithells Metals Reference Book* to different intensities at different locations in order to form a part with varying mechanical properties over its surface, as taught by Hassell et al., for a particular application.

9. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al. (US 2,992,148) in view of Takagi et al. (US 2004/0009366 A1) and further in view of *Smithells Metals Reference Book* (8<sup>th</sup> ed. Edited by W.F. Gale and T.C. Totemeier), as applied to claim 26 above, and further in view of Brodt et al. (US 2002/0069506).



Regarding claim 31, Yeo et al. in view of Takagi et al. and *Smithells Metals Reference Book* do not teach reinforcing the sheet between heat treatment steps. Brodt et al. teach that steel sheets may be reinforced by applying a similar or same steel material onto a base sheet in order to strengthen the base sheet at particular high-pressure points (para. [0050]). Reinforcements are often more desirable than manufacturing a thicker sheet, as reinforcements allow less material to be used, resulting in a sheet that remains strong but is also lightweight (Brodt et al., para. [0003]). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the reinforcing step of Brodt et al. into the process of Yeo et al. in view of Takagi et al. and *Smithells Metals Reference Book* because it decreases manufacturing material costs while providing a steel sheet of sufficient strength.

### ***Response to Arguments***

Applicant's arguments have been considered but are moot in view of the new grounds of rejection necessitated by amendment.

### ***Conclusion***

No claims are allowable.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is 571-270-3587. The examiner can normally be reached on Monday-Friday 9:00 AM-6:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

/Vanessa Velasquez/  
Examiner, Art Unit 1793